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Contributions to Vital Statistics, especially designed to elucidate the Rate of Mortality, the Laws of Sickness, and the Influences of Trade and Locality on Health, derived from an extensive Collection of Original Data, supplied by Friendly Societies, and proving their too frequent Instability. By F. G. P. NEISON, Esq., F.S.S., F.L.S., Actuary to the Medical, Invalid, and General Life Office.

[Continued from page 343, Vol. VIII.]

Rates and Contributions of Friendly Societies.

THE influence of the results established in the former part of this communication on the rates and contributions of Friendly Societies, is that which most nearly concerns the members of those institutions. It is, therefore, proposed to add a few remarks bearing on this subject.

The first point to which attention will be directed is the Values of Annuities, according to the Rates of Mortality developed in this inquiry, for Friendly Societies in the Rural, Town, and City Districts of England and Wales—for the three districts combined—and also for Friendly Societies in Scotland. These Values will be found in Table XXX.

The rate of interest assumed in the following calculations is 3 per cent. per annum. In almost every other calculation extant for the purposes of Friendly Societies, a higher rate of interest has been adopted; but a careful investigation of the returns on this point, as given in the

TABLE XXX*.

Value of Annuities.—Three per Cent.—Friendly Societies.—Males.

Ages.	ENGLAND AND WALES.				SCOTLAND.
	Rural Districts.	Town Districts.	City Districts.	Rural, Town, and City Districts.	Rural, Town, and City Districts.
10	24·61632	24·27400	23·43143	24·35763	24·10883
15	23·58105	23·21610	22·37367	23·30430	23·00442
20	22·78605	22·18086	21·29054	22·39981	22·04167
25	22·01579	21·05800	20·15300	21·48840	21·11751
30	21·06763	19·84248	19·02036	20·48675	20·05456
35	19·92773	18·53330	17·76316	19·24911	18·83406
40	18·60452	17·01150	16·45861	17·90117	17·56000
45	17·08533	15·40168	15·11524	16·40208	16·09068
50	15·41074	13·65935	13·63015	14·77241	14·54962
55	13·66985	11·85678	12·01300	13·06832	12·86124
60	11·85797	10·12786	10·18722	11·27757	11·18877
65	9·97031	8·38614	8·45537	9·48291	9·62477
70	8·26474	6·72612	6·84949	7·80205	8·01955
75	6·88702	5·73900	5·30768	6·45931	6·44582
80	5·62034	4·64316	3·82960	5·15847	4·60254
85	4·65920	3·21398	2·61777	3·99517	3·44665
90	3·02089	1·93288	1·73900	2·46913	2·34280
95	1·36282	1·24523	1·23064	1·29460	1·29804
100	....	....	....	....	....

* This, and the eleven following Tables, will be found complete for every age, in "Contributions to Vital Statistics," published by Simpkins, Marshall and Co.

Schedules referred to at page 297, vol. viii., has shown that in practice a higher rate of interest is not realised by Societies.

The Commissioners for the Reduction of the National Debt have hitherto allowed Friendly Societies 3*l.* 16*s.* 0*½d.* per cent.; but even in the cases where this mode of investment has been taken advantage of, the difficulty of collecting all the funds at the moment they fall due, and of immediately employing them in the Government Stock, together with the comparatively large balance to the whole amount of the Societies' funds usually kept in hand to meet approaching liabilities, render it difficult to make such beyond 3 per cent. It is intended on

TABLE XXXI.

*Value of Deferred Annuities to commence at Age 70.—Three per Cent.—
Friendly Societies.—Males.*

Ages.	ENGLAND AND WALES.				SCOTLAND.
	Rural Districts.	Town Districts.	City Districts.	Rural, Town, and City Districts.	Rural, Town, and City Districts.
10	·65112	·42290	·38922	·56105	·5388
15	·76513	·49756	·46062	·65971	·6335
20	·91400	·59034	·54896	·78632	·7551
25	1·09932	·70339	·65852	·94337	·9081
30	1·32102	·84266	·79819	1·13398	1·0936
35	1·58746	1·01625	·97311	1·36739	1·3232
40	1·91180	1·23160	1·20038	1·65581	1·6149
45	2·31101	1·50478	1·50262	2·01895	1·9792
50	2·81868	1·86923	1·90308	2·48959	2·4632
55	3·50134	2·37996	2·45326	3·12949	3·1099
60	4·45356	3·16628	3·22609	4·04001	4·0594
65	5·85372	4·42512	4·50804	5·41330	5·5670

TABLE XXXII.

*Value of Temporary Annuities to continue till Age 70.—Three per Cent.—
Friendly Societies.—Males.*

Ages.	ENGLAND AND WALES.				SCOTLAND.
	Rural Districts.	Town Districts.	City Districts.	Rural, Town, and City Districts.	Rural, Town, and City Districts.
10	23·96250	23·85110	23·04221	23·79658	23·5700
15	22·81592	22·71854	21·91305	22·64459	22·3709
20	21·87205	21·59052	20·74158	21·61349	21·2866
25	20·91647	20·35461	19·49448	20·54503	20·2094
30	19·74661	18·99982	18·23217	19·35277	18·9610
35	18·34027	17·51705	16·79005	17·88172	17·5109
40	16·69272	15·77990	15·25823	16·24536	15·9451
45	14·77431	13·89690	13·61262	14·38313	14·1115
50	12·59206	11·79012	11·72707	12·28282	12·0864
55	10·16851	9·47682	9·55974	9·93883	9·7513
60	7·40441	6·96158	6·96113	7·23756	7·1294
65	4·01659	3·96102	3·94733	4·06961	4·0578

TABLE XXXIII.

Single Premium for Sum at Death.—Three per Cent.—Friendly Societies.—Males.

Ages.	ENGLAND AND WALES.				SCOTLAND.
	Rural Districts.	Town Districts.	City Districts.	Rural, Town, and City Districts.	Rural, Town, and City Districts.
10	·25397	·26387	·28840	·26143	·26868
15	·28404	·29468	·31921	·29211	·30084
20	·30720	·32483	·35076	·31845	·32888
25	·32964	·35753	·38389	·34500	·35580
30	·35725	·39294	·41688	·37417	·38676
35	·39046	·43107	·45350	·41022	·42231
40	·42900	·47539	·49150	·44948	·45942
45	·47324	·52228	·53064	·49314	·50221
50	·52202	·57303	·57388	·54061	·54710
55	·57272	·62553	·62098	·59024	·59628
60	·62550	·67589	·67416	·64240	·64499
65	·68048	·72662	·72460	·69467	·69054
70	·73015	·77497	·77137	·74363	·73729
75	·77028	·80372	·81628	·78274	·78313
80	·80718	·83564	·85933	·82063	·83682
85	·83517	·87726	·89463	·85451	·87048
90	·88289	·91457	·92022	·89896	·90264
95	·93118	·93461	·93503	·93317	·93307
100	....	....	....	....	....

TABLE XXXIV.

Annual Premium for Sum at Death.—Three per Cent.—Friendly Societies.—Males.

Ages.	ENGLAND AND WALES.				SCOTLAND.
	Rural Districts.	Town Districts.	City Districts.	Rural, Town, and City Districts.	Rural, Town, and City Districts.
10	·00992	·01044	·01181	·01031	·01070
15	·01156	·01217	·01366	·01202	·01253
20	·01292	·01401	·01574	·01361	·01427
25	·01432	·01621	·01815	·01534	·01609
30	·01619	·01885	·02082	·01741	·01837
35	·01866	·02207	·02417	·02026	·02129
40	·02188	·02639	·02815	·02378	·02475
45	·02617	·03184	·03293	·02834	·02939
50	·03181	·03909	·03923	·03428	·03518
55	·03904	·04865	·04772	·04196	·04302
60	·04865	·06074	·06026	·05232	·05292
65	·06203	·07742	·07663	·06627	·06499
70	·07881	·10031	·09827	·08448	·08174
75	·09767	·11926	·12941	·10493	·10518
80	·12193	·14808	·17793	·13325	·14937
85	·14758	·20818	·24729	·17107	·19576
90	·21958	·31183	·33597	·25913	·27003
95	·39410	·41627	·41918	·40668	·40604
100	....	....	....	....	....

another occasion to publish an account of the Money Transactions of those Societies; this and some other points of interest will then be more fully entered on.

The distinguishing features of the Rates of Mortality in the respective Districts will of course develop themselves also in the same order or relation in the value of Annuities, although not in so marked a

TABLE XXXV.

*Temporary Annual Premium to continue till Age 70 for Sum at Death.—
Three per Cent.—Friendly Societies.—Males.*

Ages.	ENGLAND AND WALES.				SCOTLAND.
	Rural Districts.	Town Districts.	City Districts.	Rural, Town, and City Districts.	Rural, Town, and City Districts.
10	·01017	·01062	·01200	·01054	·01094
15	·01193	·01242	·01393	·01236	·01287
20	·01343	·01438	·01613	·01408	·01476
25	·01504	·01674	·01873	·01601	·01678
30	·01722	·01965	·02168	·01838	·01938
35	·02019	·02328	·02549	·02173	·02281
40	·02425	·02833	·03023	·02606	·02711
45	·03000	·03514	·03631	·03206	·03323
50	·03841	·04480	·04509	·04070	·04181
55	·05128	·05971	·05881	·05396	·05546
60	·07443	·08489	·08468	·07798	·07934
65	·13565	·14647	·14646	·13703	·13653

TABLE XXXVI.

Probability of Living One Year.—Friendly Societies.—Males.

Ages.	ENGLAND AND WALES.				SCOTLAND.
	Rural Districts.	Town Districts.	City Districts.	Rural, Town, and City Districts.	Rural, Town, and City Districts.
10	·997700	·997250	·996040	·997500	·99750
15	·995652	·996214	·995263	·995821	·99586
20	·992605	·994651	·993556	·993243	·99298
25	·992772	·994054	·990194	·992985	·99246
30	·992890	·992597	·990723	·992435	·99208
35	·992641	·991530	·988585	·991700	·99044
40	·992028	·990401	·985986	·990613	·98923
45	·990855	·987873	·983303	·988797	·98751
50	·988003	·983727	·980604	·985730	·98416
55	·983605	·976814	·977049	·981017	·98005
60	·978407	·967278	·969541	·974951	·97091
65	·968353	·955815	·954033	·964479	·96156
70	·949565	·927706	·936080	·944698	·94905
75	·929889	·900362	·910395	·923389	·93550
80	·903566	·890423	·864990	·898349	·89612
85	·886486	·842001	·789248	·870008	·83359
90	·851890	·725800	·686766	·800000	·77510
95	·671780	·608280	·598592	·636453	·63830
100	....	....	....	....	....

degree, nor to the same extent as in the simple Mortality Tables. If money made no interest, it is plain that the value of Annuities, and the numerical expression in the Expectation Tables or Mortality Tables of Collective Intensity, would be identical, and under that aspect Annuities would have a maximum value. Again, if money could realize an infinite amount of interest, Annuities would then be

TABLE XXXVII.

Probability of Dying in one Year.—Friendly Societies.—Males.

Ages.	ENGLAND AND WALES.				SCOTLAND.
	Rural Districts.	Town Districts.	City Districts.	Rural, Town, and City Districts.	Rural, Town, and City Districts.
10	·002300	·002750	·003960	·002500	·00250
15	·004348	·003786	·004737	·004179	·00414
20	·007395	·005349	·006444	·006757	·00702
25	·007228	·005946	·009806	·007015	·00754
30	·007110	·007403	·009277	·007565	·00792
35	·007359	·008470	·011415	·008300	·00956
40	·007972	·009599	·014014	·009387	·01077
45	·009145	·012127	·016697	·011203	·01249
50	·011997	·016273	·019396	·014270	·01584
55	·016395	·023186	·022951	·018983	·01995
60	·021593	·032722	·030459	·025049	·02909
65	·031647	·044185	·045967	·035521	·03844
70	·050435	·072294	·063920	·055302	·05095
75	·070111	·099638	·089605	·076611	·06450
80	·096434	·109577	·135010	·101651	·10388
85	·113514	·157999	·210752	·129992	·16641
90	·148110	·274200	·313234	·200000	·22490
95	·328220	·391720	·401408	·363547	·36170
100	....	....	....	....	....

TABLE XXXVIII.

Single Premium for Sickness.—Three per Cent.—Friendly Societies.—Males.

Ages.	ENGLAND AND WALES.				SCOTLAND.
	Rural Districts.	Town Districts.	City Districts.	Rural, Town, and City Districts.	Rural, Town, and City Districts.
10	30·51966	36·22972	28·20766	31·86825	27·2409
15	32·90212	37·24804	31·49726	34·09838	30·5778
20	34·68519	39·80233	35·41518	36·20420	32·7979
25	37·06553	42·65912	38·35728	38·74841	34·6727
30	39·71760	46·39042	40·81807	41·67304	37·0322
35	43·04039	50·82250	43·37036	45·12188	40·2840
40	46·56296	55·56052	46·00568	48·83092	44·1712
45	49·99718	59·78395	48·60345	52·34908	48·2316
50	53·45831	62·31153	50·16440	55·28222	51·8728
55	55·95894	63·22429	49·06310	56·91284	53·1216
60	55·15634	61·85428	42·69764	55·23260	51·5541
65	43·27124	48·88897	29·18848	42·94219	40·9909

at a minimum value, and have the same expression for every Table of Mortality and every age in those tables. To illustrate this, suppose money could realize 100 per cent., or always double or replace itself in the course of a year; and starting with unity, before the expiration of the first term of the annuity a new fund would have formed itself capable of meeting the annuity, and leaving exactly the original unit with which the start was made, ready to enter on a second term of the annuity in the same manner, and so on *ad infinitum*. Under such an aspect, no matter what Table of Mortality was employed, the values of annuities would differ but little, as unity would invariably be ca-

TABLE XXXIX.

Temporary Annual Premium for Sickness, to continue till Age 70.—Three per Cent.—Friendly Societies.—Males.

Ages.	ENGLAND AND WALES.				SCOTLAND.
	Rural Districts.	Town Districts.	City Districts.	Rural, Town, and City Districts.	Rural, Town, and City Districts.
10	1.22262	1.45787	1.17326	1.28519	1.1087
15	1.38152	1.57042	1.37464	1.44215	1.3084
20	1.51649	1.76190	1.62891	1.60100	1.4716
25	1.69122	1.99765	1.87159	1.79849	1.6348
30	1.91441	2.31954	2.12238	2.04753	1.8552
35	2.22543	2.74463	2.43790	2.38971	2.1762
40	2.63176	3.31129	2.82968	2.83154	2.6067
45	3.16953	4.02243	3.32613	3.40302	3.1917
50	3.93305	4.87185	1.94155	4.16193	3.9639
55	5.01042	6.03468	4.64624	5.20282	4.9409
60	6.56278	7.76910	5.36326	6.70497	6.3417
65	8.62563	9.85462	5.89985	8.47051	8.1045

TABLE XL.

Annual Premium.—Sickness.

Ages.	Highland Society*.	Ansell's Results.	England & Wales.	Scotland.
			Rural, Town, and City Districts.	Rural, Town, and City Districts.
21	.9666	1.3479	1.6368	1.5011
25	1.0708	1.4731	1.7985	1.6348
30	1.2417	1.6718	2.0475	1.8552
35	1.4583	1.9320	2.3897	2.1762
40	1.7667	2.2731	2.8315	2.6067
45	2.1917	2.7232	3.4030	3.1917
50	....	3.3318	4.1619	3.9639
55	....	4.1963	5.2028	4.9409
60	....	5.4990	6.7050	6.3417

* This column presumes on money bearing interest at 4 per cent. per annum, and consists of the reciprocals to the quantities given at page 236 of the Highland Society's Report. The other columns are calculated at 3 per cent., as explained in the body of the text.

pable, from the interest realized only, of meeting every payment for an absolute term of years. It is therefore evident that the values of annuities involving the discount of money will always shew less distinction between different Tables of Mortality than the Tables themselves will shew; and that the higher the rate of interest, the less distinction is observable between the annuities of different Tables, as well as less difference between the values of annuities at various ages for the same Mortality Table.

TABLE XLI.

England and Wales.—Whole Population.—Three per Cent.—Males.—Females.

Ages.	Value of Annuities.		Single Premium for Sum at Death.		Annual Premium for Sum at Death.	
	Males.	Females.	Males.	Females.	Males.	Females.
10	23·11227	23·14338	·29770	·29679	·01235	·01229
15	22·31543	22·38900	·32091	·31877	·01376	·01363
20	21·36038	21·54070	·34873	·34347	·01560	·01524
25	20·42957	20·69063	·37584	·36824	·01754	·01698
30	19·45529	19·77275	·40421	·39497	·01976	·01901
35	18·34839	18·76000	·43645	·42446	·02256	·02148
40	17·08318	17·60569	·47331	·45809	·02617	·02462
45	15·66814	16·26662	·51452	·49709	·03087	·02879
50	14·11352	14·74322	·55980	·54148	·03704	·03439
55	12·43500	13·05178	·60869	·59072	·04531	·04204
60	10·67861	11·26347	·65985	·64281	·05650	·05242
65	8·89699	9·41209	·71174	·69673	·07192	·06692
70	7·16642	7·60903	·76214	·74925	·09333	·08703
75	5·54513	5·93475	·80937	·79802	·12366	·11507
80	4·13709	4·47790	·85037	·84045	·16554	·15343
85	3·02174	3·28766	·88286	·87512	·21953	·20410
90	2·18378	2·37019	·90727	·90184	·28497	·26759
95	1·64619	1·73887	·92293	·92023	·34878	·33599
100	1·36660	1·29352	·93107	·93320	·39342	·40689
105	·32363	·48544	·96145	·95674	·72639	·64410

On referring to Table VII., p. 302, vol. viii., it will be seen that the difference of Expectation between the Rural and City Districts at age 30 is 14·442 per cent.; but a comparison of the values of Annuities at that age for the same Districts, as given in Table XXX., shows a difference of only 9·729 per cent. The following Abstract will give a concise view of the relative values of the two expressions:—

TABLE XLII.

Age.	Expectation of Life in		Excess per Cent. in favour of Rural Districts.	Value of Annuities, Three per Cent.		Excess per Cent. in favour of Rural Districts.
	Rural Districts.	City Districts.		Rural Districts.	City Districts.	
20	45·3550	40·0148	11·774	22·78605	21·29054	6·563
40	30·9724	26·0873	15·772	18·60452	16·45861	11·534
60	16·6524	13·7685	17·318	11·85797	10·18722	14·090

Again, for reasons precisely similar, less distinction will be found to exist between the value of annuities for various ages in the same table, than between the expectations of life for those ages; for example, the difference of expectation between ages 30 and 60 in the Rural Districts is 21.7549 years, or nearly 57 per cent.; but the difference between the values of annuities for those ages in the Rural Districts is 9.2097, or about 44 per cent. Like results will also be found for other ages, no matter what table of mortality be employed: taking the general results for the three districts for ages 50 and 70, the difference of expectation will be found to be 11.9863 years, or about 54 per cent.; but the difference in the values of the annuities for those ages is 7.1460, or 46 per cent. The difference in this instance is however less than in the former, on account of more proximate and more advanced ages being taken; but with ages less proximate and less advanced, the difference will exceed that in either of the preceding cases. Let ages 10 and 50 in the Rural Districts be compared, and the difference of expectation will be found to be 56 per cent., but the difference in the value of annuities is only 37 per cent.

From these remarks respecting the relative values of annuities, and the expectation of life in various mortality tables, it is not to be considered that practically it is a matter of indifference which table may be used as a basis for calculations for the guidance of a Society. The object of these remarks is intended to lead to quite the opposite conclusion, and to prevent those who are not thoroughly conversant with such subjects from hastily adopting any given table, simply because the money test, by which it is generally brought into comparison with other tables, shows but little difference. The success of every Friendly Society, and other Institution dealing in life contingencies, depends in a great measure on the proper investment of its funds; and although annuities by two different mortality tables may apparently approximate to nearly equivalent values, still, before all the conditions of each table are practically determined, the accumulation of interest as presumed on in the construction of the tables, will ultimately realize the maximum difference which is found to prevail between the expectation of life for the respective tables.

The following are the values of annuities at 3 per cent. as given in Table XXX., and also according to the Carlisle Table, Mr. Ansell's Table, and the Northampton Table.

TABLE XLIII.

Age.	ENGLAND AND WALES.				SCOTLAND.	Carlisle.	Ansell.	Northampton.
	Rural Districts.	Town Districts.	City Districts.	Rural, Town, and City Districts.	Rural, Town, and City Districts.			
20	22.78605	22.18086	21.29054	22.39981	22.04167	21.694	20.4602	18.6385
40	18.60452	17.01150	16.45861	17.90117	17.56000	17.143	15.6673	14.8476
60	11.85797	10.12786	10.18722	11.27757	11.18877	10.491	9.8583	9.7774

To those desirous of inquiring minutely into the relative values of annuities for the different tables given in this paper, and the tables of mortality hitherto in use, a careful consideration of their respective bearings will be important; for as annuity tables are the foundation on which all the subsequent Monetary Tables are built, their peculiarities must affect the whole structure. This will be clearly seen on inspection of the Table for Deferred Annuities, Table XXXI. According to that table, at age 30 the value of a Deferred Annuity of 1*l.* per annum, to commence forty years hence or on attaining age 70, is, for the Rural, Town, and City Districts, 1·13398, and the value of the same sum according to Mr. Ansell's Table is only ·6764. This is a most remarkable distinction, and of vital importance to Friendly Societies; for although the present results for age 30 show only an excess of value in simple or immediate annuities of less than 13 per cent. above those given by Mr. Ansell, yet in the Deferred Annuity at the same age there is an excess of 69 per cent. It is under such circumstances as these, when the improvement of money at interest magnifies results, that serious blunders in the adoption of an erroneous mortality table will be apt to prove hurtful to the interests of a Society.

Few Friendly Societies granting Deferred Annuities have yet survived long enough to suffer from the effects of so serious an error; but the above illustration points out the inevitable ruin which must overtake those Societies at present granting Deferred Annuities, as very few of them exact even so favourable terms as are required by Mr. Ansell's Tables. A further illustration of the manner in which this peculiar result is produced, may be obtained by referring to Table F, page 28, of the "Contributions". It will be seen, that of 89360 persons living aged 30, 42367 attained their 70th year of age; that is to say, out of 100 entering a Friendly Society at 30 years of age, and purchasing Deferred Annuities, 47 would be alive at 70 years of age, to be placed on the annuity list; but Mr. Ansell's Table would provide for 33 only of such persons becoming annuitants. Or more correctly, out of every 1000 members entering those Societies at age 30, there would be 147 annuitants unprovided for; that is to say, 45 per cent. more annuitants would have to make claims, than would be calculated on by Mr. Ansell's data, and who would therefore be left destitute of any provision for old age.

The melancholy spectacle which such a state of things would produce can be readily imagined. Supposing that at the present time there are only one million members of Friendly Societies, (which is much under the correct estimate,) whose average age is about 30, and presuming that the terms for Deferred Annuities are graduated according to the preceding hypothesis, 470,000 of those persons would attain the age of 70, and nearly one-third would be without any provision for old age. This is only one of the many evils connected with the present condition of Friendly Societies; and although its visitation be more remote, the awful consequences of such a calamity, like every other evil of procrastination, will be irreparable.

Table XXII. presents the value of Temporary Annuities to continue till age 70; and from what has been said respecting Immediate Annuities absolute for life, and Deferred Annuities, it must be evident

that Temporary Annuities will also partake of the same character in relation to the other Annuity Tables just referred to.

Since it has been shown that, according to the results of this inquiry, annuities are of greater value than those given in many other tables, it must follow that the value of assurances, or sums payable at death, is less. An inspection of Table XXXIII. will show that at age 30 the value of 100*l.* payable at death is 35*l.* 14*s.* 6*d.* in the Rural Districts; 39*l.* 5*s.* 11*d.* in the Town Districts; 41*l.* 13*s.* 9*d.* in the City Districts; 37*l.* 8*s.* 4*d.* in the Three Districts combined; and 38*l.* 13*s.* 6*d.* according to the value of life in Scotland: while, according to the Carlisle Table of Mortality, the value of the same sum would be 40*l.* 2*s.* 7*d.*; by Mr. Ansell's Table 44*l.* 2*s.* 7*d.*; and by the old Northampton Table as much as 47*l.* 16*s.*

Again: the annual premium at age 30 for an assurance of 100*l.* at death will, according to Table XXXIV., be 1*l.* 12*s.* 5*d.* for the Rural Districts; 1*l.* 17*s.* 9*d.* for the Town Districts; 2*l.* 1*s.* 8*d.* for the City Districts; 1*l.* 14*s.* 1*d.* for the Three Districts combined; and 1*l.* 16*s.* 9*d.* for Scotland: but the annual premium according to the Carlisle Table is 1*l.* 19*s.*; by Mr. Ansell's Table 2*l.* 7*s.* 1*d.*; and by the Northampton Table 2*l.* 13*s.* 4*d.* Nothing beyond the most general view of the various Tables is proposed to be here taken, as the remarks formerly made respecting the Tables of Mortality themselves will point out the various modifications which the results must undergo in their application to monetary purposes.

In Table XXXV. will be found the Temporary Annual Premiums payable until age 70, to assure a sum payable at death, whenever that may happen, for each of the districts. And in Tables XXVI. and XXXVII. will be found the probabilities of living for one year and of dying in one year for each district. As these form elements in the determination of the rates or premiums for allowances during sickness, they are simply inserted as a check upon the calculations.

The next table to be brought under notice is Table XXXVIII., which represents the single premium necessary to provide an allowance of 1*l.* per week during sickness or incapacity for labour up till the age of 70. All the tables here given are meant to be illustrative of the true bearings and risks of Friendly Societies; and the age of 70 has been fixed on in the present instance, and in the other tables of Temporary Premiums, because it is an age usually adopted in calculations for Friendly Societies, and will therefore admit of easy comparison with other results on the same subject.

As no attempt has been made in this paper to enter into the general principles of Vital Statistics, or to discuss the methods and formulæ most applicable to questions of life contingency, those desiring information on such points had better consult the standard works on the subject; but the calculations in reference to the benefits offered by Friendly Societies being limited to the term of 70 years of age, and as it will be necessary in practice to have tables for other terms of life, it may be convenient for reference to give the formulæ by which the results in Table XXXVIII. were obtained.

Let α = the average amount of sickness to each individual for the year immediately following any given age, as given in Table XXII.

Let b = the present value of 1*l.* due six months hence; and

Let $a \times b = x$; also let

p = the probability of a life of the given age living one year; and

c = the present value of 1*l.* due one year hence; and

Let $p \times c = y$; then if

z is made to represent the present value of 1*l.* per week during sickness, from any given age up to an older age—say 70, the successive values for the z representing each age are found under the following expression:

$$z_n = (\lambda z_{n+1} + \lambda y_n) + x_n$$

And if θ is made to represent the terms at the respective ages in Table XXXII.,

$\lambda z_n - \lambda (1 + \theta)$ will give the annual premium for an allowance of 1*l.* per week during sickness or incapacity for labour, as set forth in the table at page 121. In that table both the annual premium and the benefit are understood to cease on attaining 70 years of age, or sooner in the event of death.

The tables referred to are calculated on the supposition that the various payments are to be made annually; but it is well known that Friendly Societies rarely make any payments at so remote periods. For strict practical purposes, tables involving the consideration of annuities payable in monthly or weekly instalments would be better fitted; but as the object of this paper is to furnish data illustrative of the condition of those Societies and of the nature and extent of the risks undertaken by them, rather than to give practical details for their guidance, further tables have not been inserted.

It is obvious from the remarks already made in regard to Table XXII., that the premium for an allowance in sickness, according to the results of this inquiry, must be higher than those of former tables. As Mr. Ansell's information on this subject is the most deserving of attention, the comparison will be limited to the values given at pages 133 and 134 of his interesting treatise. At age 30 the value of 1*l.* per week during sickness, up to 70 years of age is 30.0958; (see Table XLIV.) but according to the results in Table XXXVIII., it is 39.7176*l.* for the Rural Districts; 46.3904*l.* for the Town Districts; 40.8181*l.* for the City Districts; 41.6730*l.* for the Rural, Town, and City Districts combined; and 37.0322*l.* for Scotland. These values, though widely different from those given by Mr. Ansell, are still not greater than might be expected after a careful consideration of Table XXII*., and the remarks made in the preceding pages on that table. It has been stated that the values of Annuities calculated from different mortality tables will always show less difference than the mortality tables themselves; but the same feature does not present itself in connection with sickness tables. Two different tables on the plan of Table XXII. might indicate precisely the same ratio of sickness at each age, and yet the value of a sick allowance calculated for the one table might differ widely from that for the other.

* See the table in full in the "Contributions," page 92.

In the Annuity Tables two elements only affected the results—the rate of mortality, and the rate of interest; but three elements affect the Sickness Tables—the rate of mortality, the rate of interest, and the rate of sickness. It has been shown that the rate of mortality does not necessarily increase with an increase in the rate of sickness; and therefore two classes of the population may be influenced by the same or nearly the same degree of sickness, and yet be subject to very different rates of mortality. Keeping this in view—suppose there are two Sickness Tables, A and B, having the same or nearly the same rate of sickness at each age; but that the population of Table A is subject to a high rate of mortality compared to Table B; it is evident, that although each individual of the same age in both tables would in the course of the same year of life experience the same degree of sickness, yet each person under Table B would be subject to a greater amount of sickness over the whole duration of his life; and for the simple reason, that his expectation of life is greater. Take any number of persons—say 100, on the former table at 30 years of age, and suppose their expectation, or, for greater exactitude, their equation of life, to be 30 years; one-half only of those lives would live to attain 60 years of age: but if on the other Table the equation of life were 40 years, one-half of the same number would not be dead till 70 years of age, a considerable portion of which would be subject to an increased ratio of sickness in the decennial period following age 60. It happens that there is an actual case in point to illustrate this hypothesis. The Rural Districts of England and Wales, and the Average Results for all Scotland, show almost exactly the same amount of sickness in the aggregate over the whole period of forty years, from age 30 to 70, differing by less than two-tenths of a week's sickness; the amount in the

Rural Districts of England and Wales, being	121·1448 weeks
And in the whole of Scotland	121·3164 do.

But the equation of life for the former at age 30 will be found (Table XIX.) to be 40·813 years, while for the latter it is only 37·478 years, being a difference of 3·335 years. And therefore, although there is no greater amount of sickness in the Rural Districts of England and Wales than in Scotland generally, still the value of a sick allowance in the former is greater than in the latter. According to Table XXXVIII. it will be found to be at age 30, for the

Rural Districts of England and Wales.....	£39·7176; but for
The whole of Scotland only	£37·0322

It is therefore evident that the rate of sickness is not of itself a sufficient index to the rates of premium that may be deduced therefrom. In Table XXVII. it was shown that the excess of sickness in the present results above those by Mr. Ansell was 21 per cent., but the values for sick allowance, quoted, show a difference of above 31 per cent. The feature, therefore, which was characteristic of Annuity Tables—of approximating nearer to equivalent values than the Mortality Tables from which they were deduced—does obviously not distinguish Sick Allowance Tables.

There is another feature connected with Tables of the Rates of Sickness, which will affect their money-values, independently of the

influence of the rates of mortality, and this is the graduation or distribution of sickness over the various periods of life. It might happen that two Sickness Tables gave the same amount of sickness within a given period of years, but that in the one table it was more uniformly spread over the various terms of life; not showing, as in the other table, a very low rate of sickness at the younger ages, and a very high rate at advanced ages. This circumstance, although the rate of mortality in both tables were the same, would occasion a difference in the value of sick allowances—and for two reasons; first, because the bulk of the sickness in the one table being deferred till the advanced ages, those persons dying before reaching those ages would experience a minimum amount; and second, on account of the money liabilities also being deferred, the investment of the early premiums would accumulate at interest. An inspection of Table XXV., given at page 330, vol. VIII., and the table at page 322 of the same volume, will show that such a relation exists between Mr. Ansell's Table and the general results of this inquiry; the sickness in his table being more uniform, and showing less disparity for the various ages, while the Highland Society Table runs almost parallel over the whole term of life, from 20 to 70 years of age, with the results for the three Districts.

The following abstract will show the comparative values of an allowance of 1*l.* per week in sickness, up till age 70:—

TABLE XLIV.

Age.	Mr. Ansell's Table.	ENGLAND AND WALES.				SCOTLAND.	Age.
		Rural Districts.	Town Districts.	City Districts.	Three Districts combined.	Three Districts combined.	
20	27·0881	34·68519	39·80233	35·41518	36·20420	32·7979	20
30	30·0958	39·71760	46·39042	40·81807	41·67304	37·0322	30
40	34·3204	46·56296	55·56052	46·00568	48·83092	44·1712	40
50	38·7078	53·45831	62·31153	50·16440	55·28222	51·8728	50
60	39·2316	55·15634	61·85428	42·69764	55·23260	51·5541	60

The important effect of the above differences on the stability and permanence of a Society is obvious. The distinction which has been observed in respect of single payments or premiums, will also be found to prevail in the annual premiums, as given in Table XXXIX.; and the following abstract will give a general idea of the merits of the various tables. The annual premium, as well as the sick allowance, will also terminate in this case on attaining 70 years of age.

The preceding observations will be sufficient to point out the leading features of the Sickness Tables, and to suggest the proper modes of application to the practical uses of Friendly Societies. It is not expected that the present paper will obtain anything like a general circulation among the members of those Societies, or a different style and mode of treating the subject would have been adopted. All that has been contemplated is such an exhibition of the facts and data as will afford a means of determining the various contingent risks on which the liabilities of Friendly Societies depend, and in such a manner

TABLE XLV.

Age.	Mr. Ansell's Table.	ENGLAND AND WALES.				SCOTLAND.	Age.
		Rural Districts.	Town Districts.	City Districts.	Three Districts combined.	Three Districts combined.	
20	1·3206	1·51649	1·76190	1·62891	1·60100	1·4716	20
30	1·6718	1·91441	2·31954	2·12238	2·04753	1·8552	30
40	2·2731	2·63176	3·31129	2·82968	2·83154	2·6067	40
50	3·3318	3·93305	4·87185	3·94155	4·16193	3·9639	50
60	5·4990	6·56278	7·76910	5·36326	6·70497	6·3417	60

as to be intelligible to those taking an interest in Vital Statistics; but as in addition to the prizes given, as mentioned at page 297, vol. VIII., a further inducement was held out to parties furnishing data, by a promise to publish the results, and to present copies to every contributor of data,—and as the paper will have a circulation to that extent at least,—it is proposed to add a few remarks bearing on the present condition of Friendly Societies.

One of the difficulties in the way of obtaining information was the fear, on the part of the members, that its publication might prove hurtful to particular Societies; and it was therefore necessary to come under a promise, that whatever use was made of the information, no individual Society would be referred to. But that a general idea may be formed of the condition of Friendly Societies, in respect of the adequacy of their contributions for the benefits held out by them, fifty Societies have been selected at random; and in order to make the illustration more simple, one period of life only, age 35, has been fixed on, and the rates in each of the fifty Societies in question examined and graduated to represent an allowance of 1*l.* per week during sickness, up till age 70—an annuity of 13*l.* per annum for life after 70—and a sum of 10*l.* payable at death, whenever that may happen. The corresponding rates having been determined in each Society for the above scale, they were found to average only 1*l.* 11*s.* 5*d.*; but in many of the Societies an entry money is paid, and for the same age it was found to average 1*l.* 1*s.* 9*d.* As the value of the temporary annuity at the same time of life is 17·88172, the above entry money will be equivalent to an annual contribution of about 1*s.* 3*d.*, which, added to the other item, will render the whole annual contribution 1*l.* 12*s.* 8*d.* The inadequacy of such a contribution to provide for the benefits offered must be apparent; Table XXXIX. will show, that for the single benefit of 1*l.* weekly, during sickness, the annual contribution should be 2*l.* 7*s.* 9½*d.*; and on examination of the respective Tables it will be seen that the contribution adequate to provide for the three benefits offered is 3*l.* 7*s.* annually, or more than double the actual amount collected. It is a most lamentable condition in which to find Societies aiming at designs so benevolent and praiseworthy. It may seem strange that they should endure for even a year or two; but if the amount of sickness in Table XXVII. be examined, and the early age at which members generally enter be borne in mind, it will appear

that they may survive at least twenty-five or thirty years before their insecurity may become evident to an ordinary observer. Members are generally satisfied, in the first periods of a Society, to find that the income has exceeded the expenditure, and left a respectable balance; losing sight of the great accumulations which are necessary to meet the future liabilities incidental to their increasing years and infirmities. As a Society advances, its income will invariably, in connection with a given number of members entering at a particular age, decrease with the increase of its expenditure. Suppose a Society to commence with a given number of members, all 35 years of age;—in 25 years afterwards, the income from those members, through the deaths that take place in that period, will have decreased to seven-tenths of its original amount; while its expenditure on sickness will have trebled, and the members be fast approaching a time of life at which the expenditure will be ten times the original sum. This is a state of things for which the contributions of a Society should make ample provision; but, unfortunately, few have so considered the subject as to protect themselves against such vicissitudes.

But perhaps the most simple and correct mode of looking at the liabilities of those Societies is to consider the most improved class of them, in which separate contributions are made for each benefit offered; and in this instance also the contributions answering to age 35 only will be spoken of.

No doubt, Societies may seriously err by having badly graduated tables; and it might happen that the contributions at one period of life are abundant, while at other periods they may be quite inadequate; but as a very general view only is to be taken here of the subject, reference is made to the tables themselves for information on the graduation of rates.

A distinction in the contributions for the various benefits offered, is a valuable improvement in the management of such Societies; and accordingly collateral improvements do also progress with it; for in this class of Societies it is found that the annual contribution for a sickness benefit only is nearly equal to that of the other group of Societies referred to for the whole three benefits. To secure 1*l.* per week during sickness, the contribution is 1*l.* 10*s.* 10*d.* yearly, which is only 1*s.* 10*d.* less than the yearly contribution in the other Societies for all the benefits combined; but it has already been shown, that the real risk incurred from sickness would, from members entering at age 35, require a payment of 2*l.* 7*s.* 9½*d.* annually.

No doubt, many Societies are on a much better foundation than the above statement would seem to indicate; but it has been thought the better course to refer to the Societies as a class. A subdivision, however, of the same group was found in a better condition, and the annual payment was about 2*l.* for 1*l.* per week in sickness. No Society had its sickness contributions equal to the rates in the preceding table; but the payments in one Society was much more than in the others, having been 2*l.* 6*s.* 11*d.* annually. The necessity for a general revision of the sickness rates and contributions in Friendly Societies is therefore obvious.

With respect, however, to those Societies distinguishing the rates of contributions for sums of money payable at death, or what is gene-

rally termed assurances at death, a better state of things is found to exist. The contribution on the average of those Societies is 4*s.* 7*d.* annually for 10*l.* payable at death, while the exact risk, according to Table XXXV., requires a payment of 4*s.* 4*d.* This latter sum does not include any thing for expenses of management. If it were the practice of those Societies to keep distinct funds for each of the benefits offered, and never to allow the contributions for assurances at death to be mixed up with the moneys arising from other sources, little danger need be feared by those making a provision for death; but unfortunately such a separation of the funds is rarely observed, and the general result is, that the Assurance Fund is absorbed by the deficiencies in the other business of the Society. It may here be necessary to remark, that although the preceding sum is quite adequate to meet the contingencies from death on the average of all Societies, yet there are Societies in particular localities, the members of which follow unhealthy occupations, and such a sum would not in those instances be sufficient to meet all the liabilities from death.

The most remarkable deficiency yet observed, among even those Societies having graduated rates as well as distinct contributions for the various benefits offered, is in the contributions which provide for an annuity after attaining a given age. In Table XXXI. will be found the values of Deferred Annuities, to commence at 70; and the annual premium for the same annuity may easily be obtained from the expression—

$$\lambda \delta - \lambda (1 + \theta)$$

in which δ represents the terms found at the respective ages in the same table. Accordingly, at age 35, the annual contribution or premium for an annuity of 13*l.* a year after attaining the age of 70 is 18*s.* 10*d.*; but the rate in some Societies is as low as 8*s.* 11*d.*, and an average of a number of the best Societies is 12*s.* 2 $\frac{3}{4}$ *d.*, while the most favourable rate in any individual Society in the same group was 14*s.* 4 $\frac{1}{2}$ *d.* The nature of this risk has already been referred to at page 58; and the remarks there made should be carefully considered by every one interested in the progress of Friendly Societies, as no error carries with it such distressing and melancholy consequences, as that which aggravates the cares, anxieties, and infirmities of old age, and in the decline of life throws destitute those whose youthful industry enabled them to live in comparative independence.

Another feature of Friendly Societies, particularly the older class of them, deserving of attention, is a want of graduation in the premiums or rates of contribution. This feature, although generally associated with inadequate rates, is not of itself evidence of instability, but is rather a principle which is non-equitable to the members. The better constituted Friendly Societies have long discontinued such a plan, and have now tables graduated according to age; but as there are still many Societies not so improved, it is proposed to add a few observations on the nature of this error, which is most strikingly developed in the management of Odd-Fellow Societies.

Odd-Fellow Societies, although not numerically of the same importance with Friendly Societies, are still by no means an insignificant body of the community. What is termed the Manchester Unity con-

tains at the present time, in its various ramifications over the kingdom, about 250,000 members, and its annual income is about 330,000*l.* The members are stated to have increased, during the last few years, at the rate of 25,000 per annum.

Odd-Fellow Societies are peculiar in their constitution, and differ in some respects from Friendly Societies; but so far as the subject of life contingencies is concerned, they present the most objectionable features of the worst conditioned Friendly Societies, and generally the preceding remarks will apply with greater force to them, so far as the question of stability relates. Every lodge under what is termed the "Order of Odd Fellows," is, by the 32nd General Law, compelled to exact the following rate of initiation or entry money from all members on admission, who must not be under the age of eighteen, nor above forty.

Under 35 years of age	£1	1	0
Above 35 and under 36	1	13	0
" 36 " 37	2	8	0
" 37 " 38	3	4	0
" 38 " 39	4	2	0
" 39 " 40	5	5	0

Between 18 and 35 years of age, individual lodges sometimes vary the entry money, but they must always be within the limits here assigned; (see the laws and regulations of the Independent Order of Odd Fellows, as revised and corrected agreeably to the resolutions of the Grand Committees, and adopted by the A. M. C. held at the Isle of Man, June 1841). Of late some lodges have proposed improvements in the relation between the contributions and benefits; but the following are the rates as abstracted from the regulations of several lodges, and may be regarded as the general scale adopted. In addition to the entry money already quoted, each member must make a weekly contribution of 4*d.*, or a monthly contribution of 1*s.* 4*d.*, being at the rate of 17*s.* 4*d.* per annum. In lieu of those payments, the members are promised, in addition to many other privileges, the following benefits:—

An Allowance of	£0	10	0	per Week during Sickness,
A Sum of	10	0	0	at Death of Member,
And a Sum of	6	0	0	at the Death of a Member's Wife.

Assuming that the allowance to the member's wife is thrown out of the question, and also that the allowance during sickness should be discontinued after attaining 70 years of age—which is to view the liabilities at a very reduced rate—at the age of 18 the preceding tables would make the annual contributions 18*s.*; but the actual contribution is 17*s.* 4*d.*, to which has to be added one shilling, the value of the entry money, in yearly payments, making the total contributions 18*s.* 4*d.*, and differing but little from the true amount required. But take the case of a member entering at 35 years of age, and the non-equitable character of those Societies will immediately appear. The entry money at that age is equivalent to an annual payment of 1*s.* 9*d.* yearly; to this add the contribution of 17*s.* 4*d.*, and the full yearly payment will equal 19*s.* 1*d.*; but the preceding tables show that the contribution required at the same age is 1*l.* 8*s.* This striking disparity

places the injustice of the regulation beyond all sanction. To render the preceding scale of entry money equitable, those admitted at age 35 should pay 10*l.* 5*s.* 2*d.* instead of 1*l.* 13*s.*; so that, in fact, the practice of Odd-Fellow Societies holds out a bribe or bonus to one class of members of 8*l.* 12*s.* 2*d.* A similar remark is applicable to the admission at all other ages between 18 and 35; and notwithstanding the obvious injustice of such a system, Odd Fellows seem to possess a peculiar pertinacity in adhering to the false and insecure plans of old Benefit Clubs, which have long since been abandoned by every Friendly Society of any pretensions or importance. Although many Lodges and Districts have taken up the subject, very little improvement is to be expected till the near dissolution of the Societies excites serious attention; but that the danger of their position, and the non-equitable mode of payment, is already known to a considerable extent, is evident from the following extract from a Report, recently made by a Sub-Committee of a District containing 5000 members.

“So long as an influx of young members shall continue, the funds may appear to maintain a position which, to the eye of the inexperienced, may be altogether delusive. But when the original members shall have passed the meridian of life, and have begun to experience the infirmities of old age, the demands made upon the funds will then necessarily be so much larger. The stability of the institution will come then to be fairly tested.” And again they say, “If the present system is permitted to continue, which seems not only to involve within itself the elements of dissolution, but is constructed on principles which act unfairly towards the younger portion of the members—thus, for example, a young man of eighteen years is charged as much for his initiation as a man of thirty, while all the time the entry money of the former has been accumulating at compound interest; thus evidently showing that the entry money at eighteen is in reality nearly double of what it is at thirty, though undoubtedly it ought to be the reverse. . . That it is unjust, and likewise unsafe to the well-being of a Benefit Society, that each member should pay an equal sum, whatever his age may be at the time of his entry.”

It has been stated, that to render it equitable to members entering at ages 18 and 35 respectively, those at the latter age should pay 1*l.* 8*s.* annually instead of 19*s.* 1*d.* as at present; but it is not to be supposed that even this sum would render Odd-Fellow Societies safe, for it makes no provision for sickness after 70 years of age; but an inspection of Table XXIX. will show that the amount of Sickness after that period of life is equivalent to about 43 per cent. of permanent sickness; and on reference to the Appendix to the “Contributions,” Note IV., this will be found, at age 35, to require an additional contribution of 17*s.* 3*d.* yearly, making the whole 2*l.* 5*s.* 3*d.* instead of 19*s.* 1*d.*, or considerably more than double. The dissolution of the order of Odd-Fellowship, under such circumstances, is inevitable. Presuming that no change in the contributions and benefits should take place, a donation or gift of no less than 5,748,827*l.* would be required to enable the Order to meet all its liabilities; and that is taking it for granted that the affairs of those Societies are conducted with proper regard to economy, and the funds invested to yield at least 3 per cent. compound interest. But there is much

reason to fear that neither one nor the other of those conditions is fulfilled (see an able address by Mr. Thomas Barlow to the West Mendip Friendly Society); and the following abstract from the report of the Sub-Committee of the Glasgow District of Odd-Fellows, M. U., September, 1843, will show that even in a place proverbial for its economy in other matters, there is a lavish expenditure in the management of those Societies. In reading the following quotation, it will be necessary to bear in mind that the number of members in the district being 5000, the annual income must be about 4330*l.*:—

“The first thing to which attention is called is the expense of opening, and of regalias—an expense of, on the average, 16*l.* 8*s.* 4½*d.*, to which may be added 7*l.* for dispensation, lecture book, &c., and lodge chest—making 23*l.* 8*s.* 4½*d.*, the average of opening a lodge.

“The district and delegate expenses being, as shown, 1*s.* 6*d.* per member, which, in the Glasgow District, with its 5000 members, is at the rate of 375*l.* paid for District expenses and delegates in each year.

“The sum of 2*s.* 6*d.* paid for the surgeon to attend members is, over the whole district, at the rate of 625*l.* in the year. Current lodge expenses is returned on the average of 2*s.* per member, being 500*l.* paid in each year for lodge-room rent, &c.; being in all 1500*l.* paid in the Glasgow District for the working of the Order—a sum which will soon convince the most incredulous that the benefits of the Order will soon cease if such an expenditure is allowed to continue.”

Recently, however, a change has been proposed in the rates and contributions of the General Order of Odd Fellows by the Glasgow A. M. C. And although those terms would be greatly under what are necessary to secure the stability of the Society, still the opposition offered to such innovation seems to threaten a more immediate dissolution to the Society than even that which the inadequate nature of the contributions would effect.

It would seem that each Lodge, by a set of bye-laws, can regulate its own weekly contributions; and as an example of the curious errors into which those who are not thoroughly acquainted with such subjects will occasionally fall, it may be mentioned that one of the Lodges referred to in the preceding Report, apprehending the danger of its position under the general scale adopted by the Order, proposed new terms with a view to greater safety; and it oddly enough happens that the new rates produce a greater deficiency than the old, to the extent of 5*s.* 8*d.* annually to each member at the age of 35; and proportionate deficiencies are found at other ages.

The average age of the members in the Manchester Unity is stated by the Board of Directors to be 32 years, and the gross amount of sickness experienced by 243,122 members, being the average number during the year 1844, was 226,917 weeks, or 933 to each member. On reference to Table XXV., or to page 92 of the “Contributions,” it will be found that, at age 32, the average sickness per annum is 9250 weeks, or when the necessary correction for the maximum ages is applied in the former case, producing 6 days, 11 hours, in both instances to each member yearly. It must, therefore, be very gratifying to every one interested in the progress of Benefit Associations, for the working and middle classes to find, that the amount of sickness among the members of

those clubs, however variously constituted, shows so near an agreement, and effect almost a perfect realization of a permanent law of sickness.

Again, as to the mortality experienced by the Order, the same conformity to the preceding results will be found to manifest itself. Every previous investigation into the laws of mortality produced the belief, that the lives of the working classes of the country were of shorter duration than those of the upper classes, and also of less value than the average results for the whole country; but here we have a confirmation of the same fact, that the industrious workmen of the country experience an increased duration of life.

At age 32, the mortality of males for the whole Kingdom is 1 in 95; the mortality in the Manchester Unity is 1 in 106; and, according to the results as given in this paper, for all classes in Friendly Societies, at age 32, the mortality is 1 in 128. To further illustrate this point of the inquiry the following abstract will be useful, being an analysis of the actual results in the Manchester Unity of Odd-Fellows, for the year 1844.

District.	Average No. of Members during 1844.	Deaths of Members.	Deaths of Mem- bers' Wives.	No of Weeks Sick- ness.	No. of Members out of which		Average sick- ness yearly to each Member expressed in Weeks.
					One Member died.	One Member's Wife died.	
Rural	66208	608	434	57795	108·89	152·55	0·873
Town	77070	700	554	70435	110·10	139·01	0·913
City	99848	978	662	98687	102·09	150·83	0·988
Whole Unity	243126	2286	1650	226917	106·35	147·34	0·933

In explanation of the above table, it may be stated that the Rural District is composed of those places the population of which is under 5,000, the Town District of those places the population of which is 5,000 and under 30,000, and the City District of such places as have a population of 30,000 and upwards.

During the year 1844 it will be seen that the mortality for the whole Unity was, as already stated, about one to every 106 members, while for the Rural Districts it was one in 109; for the Town Districts it was one in 110; and for the City Districts it was one in 102.

The average amount of sickness to each member during the same year was, for the—

Rural Districts	0·873 weeks, or 6 days 3 hours.
Town Districts	0·913 " 6 " 9 "
City Districts	0·988 " 6 " 22 "
Whole Unity	0·933 " 6 " 13 "

But according to the results, already adverted to, the average amount of sickness for the same districts would be—

Rural Districts	0·863 weeks, or 6 days 1 hours.
Town Districts	0·929 " 6 " 12 "
City Districts	1·148 " 8 " 1 "
Three Districts combined	0·925 " 6 " 11 "

In instituting the above comparison, it should be kept in view that the actual ages of all the members in the Unity are unknown; but as the Directors, in their Report, have stated the average age to be 32, that age has been taken as the point of comparison. For refined purposes, objections can be brought against this step, but for the present illustration it is sufficiently correct.

Considering that the above results from the experience of the Order relate to one year only, it is the more remarkable to find them approximate so closely with the results given in the early part of this contribution from facts extending over several years.

It is evident then that the Manchester Unity of Odd-Fellows is subject to as much sickness and mortality as that shown in this paper. The evidence thus derived from the working of the Order itself, should be a sufficient answer to those who have hitherto argued, that the favourable circumstances in which the members were placed exposed them to less hazards than the members of ordinary Friendly Societies. The facts of the case, it will be seen, do not support this supposition. It is, therefore, obvious that rates of contributions less favourable than those set forth in the tables here given, would be unsafe for the guidance of the Order.

Again, it has been said that the deficiencies in the rates of contribution will be amply compensated for by the donations to the Society, and the number of members who never seek relief from it. The latter part of the argument clearly falls to the ground, as the actual amount of relief given is quite equal to that anticipated by the tables; and as to the benefits to be derived from donations, which some have represented erroneously at 20 per cent. of the whole income, it will be found that the amount from all sundry items not only does not help the contributions of the Order, but is inadequate to meet the expenses of management, being only 42 per cent. of that amount. It is, therefore, imperative on the Order to graduate their rates on a scale equivalent at least to that given in the tables already referred to.

The following is the income and expenditure for the whole Order during the year 1844:—

<i>Income.</i>		£	s.	d.
From Contributions		245,847	13	8
„ Initiations, or Entry Money.....		49,382	9	1
„ Fines, Goods, and Sundries.....		29,978	8	5
Total Income during 1844		325,208	11	2
<i>Expenditure.</i>				
Paid to Sick Members.....		107,440	8	11
„ for Funerals, District and Widow and Orphans' Fund		62,742	11	6
„ for Sundries		71,420	16	4
Total Expenditure during 1844		241,603	16	9
Surplus of Income over Expenditure for the year 1844		83,604	14	5
or an annual saving to each member of nearly 7s.				

The following will give an idea of the expenses of management of the Order:—

Ratio of Expenses of Management to the whole Expenditure.....	29 per cent.
„ to the Amount paid to Sick Members.....	66 „
„ to the Amount paid for Funerals.....	113 „
„ to the Income from Contributions	28 „

It is evident that if such an application of the funds be permitted to continue, the dissolution of the Order must be fast approaching. The Directors of the Unity are therefore most imperatively called on to interpose their influence to prevent such a lavish expenditure on the part of the Lodges. It will be seen that it is not to one year alone that this enormous outlay is confined, but must have been peculiar to the whole history of the Order. In 1834 the number of members in the Order was about 60,000, and at the beginning of the present year the number was 251,727—increase about 19,000 per annum; but in connection with this, a remarkable fact deserving of serious consideration is brought to light by the Directors. They state that “the amount of initiation-money which was received from members in 1844 being no less a sum than 49,382*l.*, it will be discovered on reference to the list of Lodges, that our increase of members in that year was only 21,461, and by these returns it is clearly proved that upwards of 40,000 members were initiated in 1844; thereby at once affirming, that upwards of 20,000 members left the Order in one year, after paying their initiation-money and contributions for a length of time. We are of opinion that the particular attention of the members of the Order should be drawn to this important fact, with a view of arriving at the true cause why so many leave the Order.” At this rate the total amount of initiation-money received by the Order ought at this time to have realized a capital of 750,000*l.* at least, without any augmentations from other contributions; but it is understood that the whole capital of the Order does not exceed 700,000*l.*: so that the Unity now finds itself in this position,—that they have been proceeding on a plan, by which the contributions required by the Order are not sufficient to meet the current expenditure, and that they have been actually falling back on the initiation-money of the members. Further argument is not needed to show the insecurity of any institution when based on such a system. And it ought to be kept in view that this state of things prevails when the bulk of the members must be very young, and are represented at an average age of 32—a period of life at which the rate of sickness is not equal to one week per annum to each person. Where then is the boasted provision so loudly proclaimed by some to meet the vicissitudes and infirmities of after-life, when the rate of sickness per annum will be from ten to twenty weeks to each member? It is astonishing that people can be so blind to their own interest, and not see the awful calamity which awaits them unless decided improvements are effected in the condition of the Order. In Manchester, the fountain head of the Unity, the greatest possible opposition has been given to the recent changes suggested by the A.M.C., and carried out by the G. M. and Board of Directors. The most angry and violent manifestation of feeling has evinced itself, threatening dangerous and fearful consequences to the safety of the whole Order; and yet in the same district, palpable and obvious examples are to be found of the utter inability of the Order to have survived long under its former deplorable condition. In Manchester itself there are six Lodges, established on an average of twelve years, and, on the 1st of January of the present year, they contained 530 members, and were possessed of funds—to what amount will it be believed possible? why the lamentably small sum of 91*l.* 13*s.* 6*d.*, or less than one-twelfth of the entry-money which

must have been paid into the Lodges. Again, there are twelve other Lodges, established for an average period of $4\frac{1}{4}$ years, and containing 613 members, and their total amount of funds is 313*l.* 15*s.* only: and further of thirty-three Lodges which have been open for an average period of twelve years, but recently suspended, and which contain 2,774 members, the gross amount of funds they were possessed of on the 1st of January, 1845, was only 1379*l.* 6*s.* 6*d.*, or not one-half of the initiation-money paid into the Lodges. Yet, with such striking and obvious signs of decay, the Board of Directors are forced to contend against the most ill-conceived opposition. No one with his eyes open can fail to see that the Unity has arrived at that period of its history when its income must of necessity be unable to meet the required expenditure. Out of 100 Lodges, containing 11,080 members, the whole of their accumulated capital does not amount to 13*s.* per member.

It really seems surprising that any evidence beyond this should be needed to bring conviction to the minds of Odd Fellows, of the urgent need of immediate reform. In some Lodges the expense of management absolutely exceeds the amount paid for sick allowance; and in many instances amounts to a sum varying from 8*s.* to 13*s.* yearly, to each member; while in others more than half the original contributions are squandered away in the modes of management adopted, and in one district, among 2,800 members, the expense of management during last year was about 1100*l.* Nothing could stand this long, even although the rates of contributions were otherwise well graduated. Take the following as an example of the reckless expenditure indulged in by some Lodges. That it may not be thought an isolated instance, but of serious and fearful importance, it is only right to mention that the following figures show the income and expenditure of fourteen different districts, containing 297 Lodges and 17,059 members, and therefore to be considered by all well-wishers of the Order as demanding immediate redress.

<i>Income.</i>		£	s.	d.
Amount of Contributions received		21,402	15	7
Amount of Initiations		12,435	16	7
Amount of Fines, Goods, Sundries		3,712	4	9
Total Income during 1844		37,550	15	11
<i>Expenditure.</i>				
Amount paid to Sick Members.....		6,998	18	3
Amount for Funerals, Districts, and Widow and Orphan Funds....		7,566	2	4
Amount for Sundries		10,497	12	9
Total Expenditure for 1844		25,062	13	4
Surplus of Income over Expenditure for the year 1844		12,488	2	7

This perhaps contains facts of the most extraordinary kind ever yet brought before the public. Many even among the Odd Fellows themselves do not see the great moral and social revolution which the existence of such provident institutions are capable of effecting: but so long as a system of destructive and hurtful management prevails, no national or public blessing can flow from them. But reform the abuses—let the working man understand under what a delusive shadow he has placed his hopes—let him see the dangerous gulf into

which all the funds of the Order are being carried, and then reflect what must be its fate twenty years hence, if the following awful exhibition of facts is permitted—and there is no doubt he will find that his best interests can only be maintained by a speedy removal of the fatal abuses.

The following is the state of the case in the fourteen districts just referred to, which contain 297 lodges and 17,059 members.

Ratio of Initiation Money to Contributions.....	58 per cent.
Ratio of Expenses of Management to Do.	49 „
Ratio of Expenses of Management to Amount paid for Funerals....	138 „
Ratio of Expenses of Management to Amount paid for Sick Allowance	150 „

Expenses of management actually 150 per cent. of that paid away to sick members! To relieve and give assistance to members during sickness ought to be, and is, the ostensible object of the institution; but here we have an example of that great virtue of charity and social refinement being sacrificed to perhaps the idle indulgence and immoderate appetites of a few men, who, when the cause of the sick and the distressed, the widow and the orphan is pleaded, are ready to rise in noisy turbulence to crush the well-intentioned endeavours of those who attempt to sweep away such intolerable abuses.

The recent opposition to the Board of Directors is most reprehensible, and no well directed mind can look upon it otherwise than with the deepest regret. There never has existed any social and provident institution of any thing like the importance of the Manchester Unity of Odd Fellows; neither perhaps did there ever exist so gross abuses in any other. The real and essential objects of the Order have been overlooked and rendered secondary to idle pomp and parade; and those funds which were meant to provide for disease and old age have been squandered away on the follies and baubles of youth.

Now, however, that the Board of Directors have made a step in the right direction, let them be supported warmly and cordially, and the members must soon come to feel that the real interests and objects of the Unity can be promoted by so doing. This much done, and a second and greater reformation must soon follow, which will place it on a permanent foundation, and render it the most gigantic and useful institution of the day. Few at the present time understand the wonderful operation going on in the social state towards its own regeneration. Poor laws and other nostrums seem as much to irritate as allay the disease; but here we have a self-supporting institution which, although hitherto managed with a total disregard to all science and practical experience, yet contains so many germs of benevolence, love, and social order, that no less than 40,000 yearly of the hard working sons of toil and labour embrace its genial comforts and solacing charms. What then must be its influence, if once guided by the lights of reason, science, and experience, when confidence has inspired the nation in the judgment of its laws and the integrity and practicability of its principles! There is little doubt that thousands for hundreds would join its ranks; and that the national protection against vice and its horrors, which political laws have failed to secure, would be wrought out by the social improvement among the working classes themselves. But to make such an institution permanent and

secure, its means must be commensurate with the end in view; its monetary calculations must be correct, and in obedience to those laws of sickness and mortality which are known to influence its whole transactions. Before concluding, therefore, let us examine whether the tables recently prepared by the G. M. and Board of Directors are calculated to meet the objects intended.

For convenience in comparison, we shall take the case of a member who provides for 1*l.* during sickness, 20*l.* at death, and 10*l.* at the death of his wife.

According to the scale recently prepared by the Board of Directors, and now recommended to be adopted by the Order, the payment required in No. 1, or Manufacturing Class, is 10*d.* per week, or 2*l.* 3*s.* 4*d.* yearly; but the initiation money under 35 years of age is 1*l.* 1*s.* 0*d.*, which is equal to an annual payment of from 1*s.* to 1*s.* 9*d.*, differing with age from 18 to 35. Well then, as the average age of all the members in the unity is said to be 32 years, let us try the case of a person at that term of life, as it will show to what extent the proposed scale may be likely to affect the stability of the Order.

It will be found that the annual payment at age 32 for an allowance of 1*l.* per week during sickness, to continue to the extreme of life, is £3 8 9

For 20*l.* at death ("Contributions," page 116, age 32) 0 7 5

And as the deaths of members' wives in the Order is in the ratio of 1,650 to 2,286 of the members themselves, the payment necessary to provide 10*l.* at the death of a member's wife is 0 2 9

Total payment required for the three benefits promised }
by the order } £3 18 11

It will thus be seen that the benefits still promised by the Order are much greater than it is possible to provide with their proposed scale of payments. In the above instance there is a deficiency of about 1*l.* 14*s.* to each person yearly, or in other words, his payments are about 43 per cent. too low for that term of life. After the recently proposed augmentation of the scale of payments, this may seem to be still a remarkable deficiency, but the facts of the case bear it out. For No. 2, or Agricultural Class, the deficiency is still greater. In fact although the recent step taken by the Glasgow A. M. C., and acted on by the Board of Directors, is to be applauded, still it should only be regarded as a mere shadow of coming events. Any one who will take the trouble to investigate the subject will soon discover the inadequacy of the scale proposed to provide for the benefits promised to the members. But there is another error connected with the scale, which it is to be hoped will be soon remedied; and that is, that no distinction is made for difference of age. It is in part compensated for, but that to a most trifling extent, by a difference in the initiation or entry-money after 35 years of age. These improvements, however, with others, must soon be effected, if the Board of Directors persevere in the course on which they have so laudably entered.

The average age of the members is 32; and if the benefits for which the members provided were of the preceding amount, it will be

seen that the deficiency in the contribution of each will be 1*l.* 14*s.* yearly. But let us suppose that the amounts provided for are only one-half of those, (which is about the actual average) that is 10*s.* per week during sickness, 10*l.* at the death of a member, and 5*l.* at the death of a member's wife; then the deficiency in the contribution, instead of being 1*l.* 14*s.*, will be only 17*s.* yearly.

The present value of an annuity on a life of 32 is 19·98129 (see "Contributions," p. 112), or nearly twenty years' purchase; so that if the contributions are to continue on the scale now proposed, each member would need to pay down at present the sum of 16*l.* 19*s.* 8*d.* (16·984,) to make up future deficiencies in his annual payments.

But as there are 251,727 members in the Unity, those two last items multiplied together will produce the sum of 4,275,181*l.* From this subtract 700,000*l.*, the present capital stock of the Order, and 3,575,181*l.* will be the payment that should at this moment be made in order to place Odd Fellows on a secure foundation, with their proposed scale of contributions.

This shows a much smaller deficiency under the proposed rates of contributions than appeared under the former rates, which is stated at page 67 to be 5,748,827*l.*; because the deficiency to each member was under that estimate much greater than under the recently proposed scale.

The members, however, must keep in view, that should no such donation be now made to the Society (and it is not likely that such donation will be made,) then the ultimate deficiency under their proposed rates will be much more than 3,575,181*l.*; for in order to enable that sum to meet all the demands on the Society, it should be invested to yield 3 per cent. compound interest; but as there is no chance of this being done, the ultimate deficiency will be about ten millions.

It is evident that the Order of Odd Fellows stands in need of much improvement; and considering that thirty-three Members of Parliament, and between six and seven hundred of the Clergy, as well as many other elevated names, are said to be enrolled as members, it is remarkable that some gentleman of influence and scientific attainments should not before this have given attention to the lamentable condition in which his too confiding brethren of the Order are placed, and have done something to raise the Unity to the common level at least of the Friendly Societies throughout the kingdom.

There is another class of Societies which attempts to carry out the general principles of Friendly Societies; but they are, like the Odd Fellow Societies, modelled after the very rudest shape in which Benefit Clubs were formed fifty years ago: and so far as relates to their contributions and benefits, almost nothing further is necessary to be stated. "Rechabite" is the name by which those Societies are known; and every member has to come under an obligation to abstain from intoxicating liquors, and to discountenance by every lawful means in his power the drinking usages of society.

The terms on which members are admitted are according to the following scale:—entrance money at age 16 is 5*s.*, and at 40 it increases to 2*l.* 10*s.*; the monthly contribution for all ages is 1*s.* 4*d.*, or 17*s.* 4*d.* annually. The benefits promised are an allowance of 10*s.* per week in sickness and a deferred annuity of 5*s.* weekly after 70 years of age.

To young members entering the Rechabite Societies, or Tents, as they are termed, at the age of 16, the actual premium for the above benefits, making allowance for entry money, should be 1*l.* 2*s.* annually; at age 40, also allowing for entrance money, the annual premium should be 2*l.* 10*s.* 2*d.*

It will thus be seen, that by the youngest member at 16 there is an ultimate loss of 4*s.* 8*d.* annually, and by the member aged 40 there is a loss of 1*l.* 12*s.* 10*d.* annually, provided that it were possible to sustain such losses; but it is needless to add, that permanence is not to be expected with Societies so constituted. Not only do the Rechabite Societies, in common with Odd-Fellow Societies, perpetrate an injustice on the younger members by the above disparity in the payments; but that injustice is further augmented by levying a uniform tax of 3*s.* yearly, without distinction of age, for funeral money, the sum of 10*l.* being payable on the death of each member. The discouragement given to drinking usages, and the practice of temperance enjoined by Rechabites, is deserving of every support, and is well calculated to increase the comforts and elevate the moral and political condition of the working classes; but it is to be regretted that the monetary foundation on which the Societies are built should be destined to effect their overthrow at so early a period.

A class of Societies, of which there are about two thousand in the kingdom, pass under the name of the Courts of Foresters, and their object is also to provide against sickness and death; members are admitted between the ages of 18 and 38, on the same terms, and participate to the same extent in the benefits offered. It is therefore unnecessary to add any thing to what has already been remarked of Odd Fellows and Rechabite Societies, as the same observations are equally applicable to all.

The illustrations of the condition of the various grades of Friendly Societies, given in the preceding pages, have been made as general as possible, in order to insure their being readily understood by the members to whom they were more particularly addressed. It will be necessary, in every instance where any practical application is made of the facts presented, to use every caution in the selection of those examples which strictly belong to the case in point; and it is to be hoped that the marked differences which have been shown to prevail between the rates of mortality and sickness, under the many modifications as to condition and peculiarity of employment and rank in society, will be a sufficient guarantee against the indiscriminate use of the general results for the government of individual classes whose circumstances differ widely.

Should the present contribution in any degree advance the science of Vital Statistics, and place the provident and self-supporting institutions of the people on a more permanent foundation, the highest wish of the writer, in venturing on so important a subject, will be consummated.
